



## **Traulsen Refrigeration**

# **SERVICE MANUAL #02**

### **Instructions For The Installation, Troubleshooting And Repair Of Traulsen SmartChill™ Equipped Blast Chiller Models**

**50 lb. Capacity Undercounter Models  
100 lb. Capacity Reach-In Models  
200 lb. Capacity Roll-In & Roll-Thru Models**



#### **-NOTICE-**

This Manual is prepared for the use of trained Authorized Traulsen Service Agents and should not be used by those not properly qualified, nor should the equipment for which it is prepared be adjusted or repaired by anyone except properly qualified personnel. This manual is not intended to be all encompassing, but is written to supplement the formal training, on-the-job experience and other product knowledge acquired by Authorized Traulsen Service Agents. Reproduction or other use of this Manual, without the express written consent of Traulsen & Co., Inc. is prohibited.

# TABLE OF CONTENTS

## I. THE SERIAL TAG

## II. GENERAL INFORMATION

- a-Introduction
- b-Operation
- c-Cleaning
- d-Applicable Models
- e-Wiring Diagrams
- f-Tool Requirements

## III. SPECIFICATIONS/OPERATING DATA

## IV. SERVICING THE SMART CHILL™ CONTROL

- a-Service Mode
- b-Updating The Service Date
- c-Setting The Clock
- d-Service Menu
- e-Service Menu-Diagnostic Test
- f-Service Menu-Refrigeration System/Air Flow Test
- g-Service Menu-Probes/Alarms Test
- h-Service Menu-Display Test
- i-Service Menu-Door Test
- j-Service Menu-Defrost System & Coil Probe Test
- k-Service Menu-Fan Output Test
- l-Service Menu-Printer Test

## V. SmartChill™ FACTORY SETTINGS

- a-Factory Settings Mode
- b-Resetting The Serial Number
- c-Settings-Back Door
- d-Settings-Label Printer
- e-Settings-Fans In HLD Cycle
- f-Settings-Blasting DIFF
- f-Settings-Holding DIFF
- h-Settings-ANTI-SHORT
- i-Settings-Defrost Time
- j-Settings-Defrost Temp

1	V. SmartChill™ FACTORY SETTINGS (cont'd)	
	k-Settings-Defrost INTVL	8
	l-Settings-Security Code	8
2	m-Secure Settings-MACH. MODEL	9
2	n-Secure Settings-Machine Size	9
2	o-Secure Settings-Soft Freeze	9
2	p-Secure Settings-Freeze Max	9
2	q-Secure Settings-FRZ Min	9
2	r-Secure Settings-Defrost Type	9
2	s-Secure Settings-Saving Changes	9-10
3	t-Software Version	10

## VI. CONTROLLER SERVICE PROCEDURES

4	a-Controller Board	11
4	b-I/O Board	11
4	c-Component Location	11

## VII. COMPONENT FUNCTION 12

## VIII. SEQUENCE OF OPERATION

5-6	a-Refrigeration System	13
6	b- IDLE Mode	13
6	c- Hold Mode	13
6	d-By Time Chill/Freeze Mode	13
6	e-By Temp Chill/Freeze Mode	13
6	f-By Product Chill/Freeze Mode	14
7	g-Defrost Mode`	14

## IX. WIRING DIAGRAMS - RBC50 MODELS 15

## X. WIRING DIAGRAMS - RBC100 MODELS 16

## XI. WIRING DIAGRAMS - RBC200 MODELS 17



## XII. TROUBLESHOOTING 18

## I. THE SERIAL TAG

The serial tag is a permanently affixed sticker on which is recorded vital electrical and refrigeration data about your Traulsen product, as well as the model and serial number. This tag is located on the left side of the interior compartment of all compact undercounter refrigerator, freezer and prep table models.

### READING THE SERIAL TAG

- Serial = The permanent ID# of your Traulsen
- Model = The model # of your Traulsen
- Volts = Voltage
- Hz = Cycle
- PH = Phase
- Total Current = Maximum amp draw
- Minimum Circuit = Minimum circuit required
- Lights = Light wattage
- Heaters = Heater amperage
- Refrigerant = Refrigerant type used
- Design Pressure = High & low side operating pressures and refrigerant charge
- Agency Labels = Designates agency listings

 FORT WORTH, TX.			
SERIAL VOLTS	MODEL Hz	PH	
TOTAL CURRENT	AMPS		
MINIMUM CIRCUIT	AMPS		
MAXIMUM OVERCURRENT PROTECTION	AMPS		
LIGHTS	WATTS		
HEATERS	AMPS		
REFRIGERANT	TYPE	OZ	
DESIGN PRESSURE	HIGH	LOW	
REFRIGERANT	TYPE	OZ	
DESIGN PRESSURE	HIGH	LOW	
SANITATION  CLASSIFIED TO NSF #7-1997 AW-03118		370-60294-00 REV (A)	

## II. GENERAL INFORMATION

### II. a - INTRODUCTION:

Blast Chillers are food processing refrigerators designed for rapid chilling of product from 140 F to 40 F in approximately 90 minutes, for reheating and/or serving at a later time.

These models aid in preserving food quality, texture and nutritional value, in addition to enhancing food safety.

All of the information, illustrations and specifications contained within this manual are based on the latest product information available at the time of printing.

### II. b - OPERATION:

Refer to the instructions contained in the Owner's Manual, form number TR35744, for specific operating instructions.

### II. c - CLEANING:

Detailed cleaning instructions are included with each unit, however, special care **MUST** be given to the condenser coil(s). These must be cleaned **WEEKLY**. This surface must be kept free of dirt and grease for proper system operation. This can be done with a vacuum cleaner using a brush attachment, or a stiff brush or wisk broom. Care must be taken not to damage the condenser coil fins. For more information please refer to section "IV. a - IV c" of the Blast Chill Owner's Manual.

### II. d - APPLICABLE MODELS:

This manual applies to the following Traulsen models:

RBC50 Undercounter Blast Chiller Models  
RBC100 Reach-In Blast Chiller Models  
RBC200 Roll-In Blast Chiller Models  
RBC200RT Roll-Thru Blast Chiller Models

**PLEASE NOTE:** This manual refers to the above models built after June 2003, equipped with the SmartChill™ control. For information regarding models built prior to that date please contact the factory.

In addition, models UBC50, RBC400 and RBC400RT are not covered by the procedures listed in this manual. Please contact the factory for more information.

### II. e - WIRING DIAGRAMS:

Refer to the wiring diagrams on pages ?? thru ?? for any service work performed on the unit. Should you require another copy, please contact Traulsen Service at (800) 825-8220, and provide the model and serial number of the unit involved.

### II. f - TOOL REQUIREMENTS:

For most jobs a standard set of hand tools, a VOM with AC current tester, electrically conductive field service grounding kit (p/n TL84919), along with a temperature tester or thermometer are adequate. However in some cases the following additional tools may be required as well:

- Refrigeration Reclaiming Equipment
- Acetylene Torch
- Nitrogen Bottle With Gauges
- Refrigeration Gauge Manifold
- Dial-a-change
- Valve Core Removal Kit
- Vacuum Pump

### III. SPECIFICATIONS/OPERATING DATA

DATA	RBC50	RBC100	RBC200	RBC200RT
H.P. <sup>1</sup>	1/2 HP	1/2 HP	3/4 HP	3/4 HP
BTU <sup>1</sup>	1350	2280	3880	3880
H.P. <sup>2</sup>	1/2 HP	1-1/4 HP	n/a <sup>3</sup>	n/a <sup>3</sup>
BTU <sup>2</sup>	1350	5460	n/a <sup>3</sup>	n/a <sup>3</sup>
Refrigerant <sup>1</sup>	R-404A	R-404A	R-404A	R-404A
Refrigerant <sup>2</sup>	R-404A	R-404A	n/a <sup>3</sup>	n/a <sup>3</sup>
Refrigerant Charge <sup>1</sup>	20 oz.	49 oz.	20 oz.	20 oz.
Refrigerant Charge <sup>2</sup>	20 oz.	92 oz.	n/a <sup>3</sup>	n/a <sup>3</sup>
Cond Unit Amp Draw (RLA) <sup>1</sup>				
Cond Unit Amp Draw (RLA) <sup>2</sup>				
Evap Fans Amp Draw (RLA)				
Unit Voltage	115/60/1	220/115	115/60/1 <sup>1</sup>	115/60/1 <sup>1</sup>
Full Load Amps	18.6	15.1	15.2 <sup>1</sup>	15.2 <sup>1</sup>

1= Self-Contained Holding or Primary Compressor.

2= Blast Chilling or Secondary Compressor.

3= These may vary depending upon type of remote condensing unit selected.

DIMENSIONS	RBC50	RBC100	RBC200	RBC200RT
Length - Overall in.	57-1/2	34	48-1/2	48-1/2
Depth - Overall in.	34-1/4	41-5/8	37-1/2	41-1/8
Height - Overall in.	34 <sup>1</sup>	80-1/8	89-1/2	89-1/2

1= Height shown to work top, height over control is 53".

Model: RBC50		
Refrigerant	R-404A	R-404A
Ambient Temperature	70° F	100° F
Suction Pressure (chill mode)		
Start of Cycle		
End of Cycle		
Suction Pressure (freeze mode)		
Start of Cycle		
End of Cycle		
Discharge Pressure PSIG		
Start of Cycle		
End of Cycle		

Model: RBC100		
Refrigerant	R-404A	R-404A
Ambient Temperature	70° F	100° F
Suction Pressure (chill mode)		
Start of Cycle		
End of Cycle		
Suction Pressure (freeze mode)		
Start of Cycle		
End of Cycle		
Discharge Pressure PSIG		
Start of Cycle		
End of Cycle		

Model: RBC200 & RBC200RT		
Refrigerant	R-404A	R-404A
Ambient Temperature	70° F	100° F
Suction Pressure (chill mode)		
Start of Cycle		
End of Cycle		
Suction Pressure (freeze mode)		
Start of Cycle		
End of Cycle		
Discharge Pressure PSIG		
Start of Cycle		
End of Cycle		

## IV. SERVICING THE SmartChill™ CONTROL

### IV. a - SERVICE MODE:

The **SERVICE MODE** allows service personnel to exercise the loads and monitor the input of the control independently to determine if the control, the electro-mechanical components and the refrigeration system are operating properly.

**WARNING:** This procedure requires that the control box be open while the power is supplied to the unit. Exercise extreme caution at all times.

**CAUTION:** Electro-static discharge will damage the control board. Use a anti-static grounding kit when servicing the computer control box.

Turn OFF the power to the unit, and remove the control panel screws and swing open the control panel in order to gain access to the service mode switch (see figure 1).

Locate the service mode switch on the back of the control board, press and hold switch while turning power ON to the chiller. The following menu will be displayed. **NOTE:** To exit service mode at any time, turn power OFF and back ON to display user main menu.

<b>LAST DATE OF SERVICE</b>	
00/00/00	
< UPDATE	
< SET CLOCK	NEXT >

### IV. b - UPDATING THE SERVICE DATE:

Pressing the button beside **UPDATE** sets the last date of service to the current date. If date is **INVALID**, set clock to current date and time.

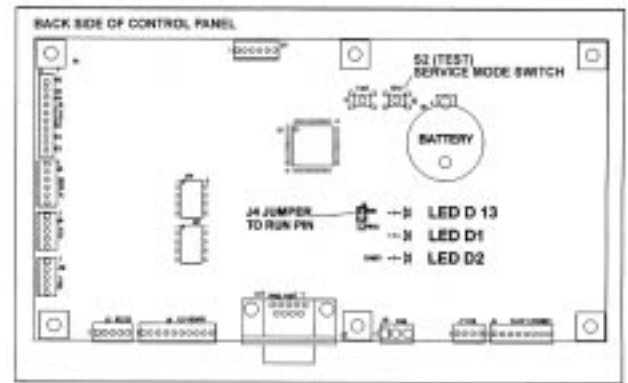
### IV. c - SETTING THE CLOCK:

Pressing the button beside **SET CLOCK** in order to display the menu below.

<b>SET CLOCK</b>	<u><b>MONTH</b></u>
↓ XX/XX/XX	XX:XX ↑
< BACK	NEXT >
< CANCEL	ENTER >

Pressing the buttons beside **BACK** or **NEXT** toggles through selection options: **MONTH/DAY/YEAR/HOUR/MINUTE**.

Pressing the buttons beside the **UP** or **DOWN** arrows changes the selected date or time numbers.



(figure 1)

### IV. c - SETTING THE CLOCK (cont'd):

Pressing the button beside **ENTER** saves the new date and time selected and displays the last date of service menu.

Pressing the button beside **CANCEL** does not save any changes made to the date or time, and returns to the last date of service menu.

### IV. d - SERVICE MENU:

Pressing the button beside **NEXT** when the last date of service menu is displayed prompts the following service menu:

< SERVICE MENU	DOOR >
< REFR/AIR	DEF/COIL >
< PROBES/ALARM	FANS >
< PRINTER	DISPLAY >

**NOTE:** From the service menu, the following service modes can be selected:

- **SERVICE MENU** - Diagnostic test
- **REFRN/AIR** - Refrigeration system & air probe test
- **PROBES/ALARM** - View current probes reading and change status of alarm output
- **DISPLAY** - Illuminates entire display
- **DOORS** - Displays status (OPEN or CLOSED)
- **DEF/COIL** - Defrost system & coil probe test
- **FANS** - Tests fan outputs
- **PRINTERS** - Sends test pattern to printer(s)

### IV. e - SERVICE MENU-DIAGNOSTIC TEST:

Pressing the button beside **SERVICE MENU** prompts the following menu:

< DIAGNOSTIC	MAXIMUM >
< RUN CYCLES	MINIMUM >
< SINCE DEF.	FAILURE >
<u>CYCLES</u>	CLEAR >

## IV. SERVICING THE SmartChill™ CONTROL (cont'd)

### IV. e - SERVICE MENU-DIAGNOSTIC TEST (cont'd):

Pressing the button beside DIAGNOSTIC returns to the service menu.

Pressing the button beside RUN CYCLES displays (in the lower left corner of the display) the number of cycles ran since last cleared.

Pressing the button beside SINCE DEF displays (in the lower left corner of the display) the number of cycles ran since last defrost.

Pressing the button beside MAXIMUM displays (in the lower left corner of the display) the maximum air temperature of the cabinet.

Pressing the button beside MINIMUM displays (in the lower left corner of the display) the minimum air temperature of the cabinet.

Pressing the button beside FAILURE displays (in the lower left corner of the display) the failure since last service cleared. If there is more than one failure, pressing the lower left button will cycle through all the failure. Below is a complete list of all possible failures:

DEFR HEAT = Defrost Heater Malfunction.

SYSTEM FAIL = Chiller Not Cooling Properly.

OVER TEMP = Internal Air Temperature Exceeds 150°F.

CONTROL = Control Board Malfunction.

INTERRUPTED = A Chilling Cycle Has Been Interrupted Either By Loss Of Main Power Or By Inadvertently Switching Power OFF.

PROBE = One Of The Probes Have Malfunctioned: Air, Coil or Product.

PRINTER = Printer Not Responding Or Out Of Paper/Label.

Pressing the button beside CLEAR clears the current item.

### IV. f - SERVICE MENU-REF'N SYSTEM & AIR PROBE TEST:

From the service menu, pressing the button beside REFN/AIR prompts the following menu:

#### REFRIGERATION TEST:

< REFN: OFF

AIR TEMP: 14°F

< COMP USAGE

BACK >

Pressing the button beside REFN can test the compressor function. The options for REFN are: OFF, ON, and ON&FANS.

OFF = Refrigeration not operational  
ON = Refrigeration operational

### IV. f - SVCE MENU-REF'N SYSTEM/AIR PROBE TEST (cont'd):

ON&FANS = Refrigeration and evaporator fans operational.

The current air temperature inside the cavity is also displayed.

The service menu can be accessed by pressing the button beside BACK, and all outputs will return to their OFF state.

Pressing the button beside COMP USAGE displays the days and hours since the last cleaning of the condenser coil.

NOTE: After cleaning the condenser coil, press the button beside CLEANED COIL to reset the day and hour for both to read "0".

The previous menu can be accessed by pressing the button beside BACK, and all outputs will return to their OFF state.

### IV. g - SERVICE MENU-PROBES/ALARM TEST:

From the service menu, pressing the button beside PROBES/ALARM prompts the following menu:

#### PRODUCT PROBE TEMPS:

1 74°F

73°F 3

2 73°F

< ALARM = OFF

BACK >

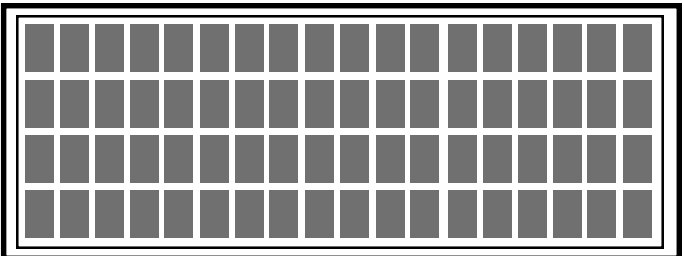
This screen displays the value of each product probe. If no value(s) shown find the source of the problem.

The alarm output can also be changed from OFF to ON.

The service menu can be accessed by pressing the button beside BACK, and the alarm output will return to the OFF state.

### IV. h - SERVICE MENU-DISPLAY TEST:

From the service menu, pressing the button beside DISPLAY illuminates the entire display (see below). Pressing any key will return the display to the service menu. This option can also be used as a test for the keypad, since any key press will return to the previous menu.



## IV. SERVICING THE SmartChill™ CONTROL (cont'd)

### IV. h - SERVICE MENU-DISPLAY TEST (cont'd):

NOTE: If the screen does not display as shown above the display board needs to be replaced. If display does not return to the service menu then the keypad needs to be replaced.

### IV. i - SERVICE MENU-DOOR TEST:

From the service menu, pressing the button beside DOORS displays the door status (OPEN or CLOSED).

<p><b>DOOR INPUTS:</b></p> <p><b>OPEN/CLOSED</b></p> <p><b>BACK &gt;</b></p>
--

NOTE: Cycling the door OPEN and CLOSED shows the status of the the unit door(s). If not find the source of the problem.

The service menu can be accessed by pressing the button beside BACK.

### IV. j - SVCE MENU-DEFROST SYSTEM & COIL PROBE TEST:

From the service menu, pressing the button beside DEF/COIL displays the defrost system and coil probe test.

<p><b>DEFROST TEST:</b></p> <p><b>&lt; HEATER = OFF</b></p> <p><b>COIL TEMP = 76°F</b></p> <p><b>BACK &gt;</b></p>
--

The defrost heat can be turned OFF or ON by pressing the button beside HEATER.

OFF = Defrost heater should not be energized.

ON = Defrost heater should energize and coil temperature should slowly increase.

The coil temperature is also displayed. If not find the source of the problem.

The service menu can be accessed by pressing the button beside BACK. Doing so also turns the heater OFF.

### IV. k - SERVICE MENU-FAN OUTPUT TEST:

From the service menu, pressing the button beside FANS displays the fan output test. The options for fans are: NONE, SET 1, SET2 and BOTH.

<p><b>FAN MODE TEST:</b></p> <p><b>&lt; FAN = NONE</b></p> <p><b>FAN DOOR = CLOSED</b></p> <p><b>BACK &gt;</b></p>
--

NONE = All evaporator fans de-energized.

SET 1 = This is the low air flow mode for soft chill mode. Only one evaporator fan is energized. If not find the source of the problem.

SET 2 = Two evaporator fans energized. If not find the source of the problem.

BOTH = All evaporator fans energized. If not find the source of the problem.

### IV. l - SERVICE MENU-PRINTER TEST:

From the service menu, pressing the button beside PRINTERS displays the printer test menu - this sends a test print to the printer(s).

<p><b>PRINTER TEST:</b></p> <p><b>&lt; RECORD: READY</b></p> <p><b>&lt; LABEL: READY</b></p> <p><b>BACK &gt;</b></p>
--

NOTE: "LABEL: READY" will not appear on the display if the optional label printer is not included with the particular unit.

Pressing the button beside RECORD sends a test print out to the standard paper printer. The "READY" on the display will change to "RUNNING", then to "SUCCESS" if the print completes successfully. Otherwise "ERROR" will appear on the display, prompting you to locate the source of the problem.

If the optional label printer is installed, the label test print can be run by pressing the button beside LABEL to send out a test print.

The service menu can be accessed by pressing the button beside BACK.

## V. SmartChill™ FACTORY SETTINGS

### V. a - FACTORY SETTINGS MODE:

The **FACTORY SETTINGS MODE** allows service personnel to return various control settings to their factory preset parameters.

**WARNING:** This procedure requires that the control box be open while the power is supplied to the unit. Exercise extreme caution at all times.

**CAUTION:** Electro-static discharge will damage the control board. Use a anti-static grounding kit when servicing the computer control box.

Turn **OFF** the power to the unit, and remove the control panel screws and swing open the control panel in order to gain access to the factory settings mode switch (see figure 2).

Locate the factory settings mode switch on the back of the control board, press and hold switch while turning power **ON** to the chiller. The following menu will be displayed. **NOTE:** To exit factory settings mode at any time, turn power **OFF** and back **ON** to display user main menu.

### V. b - RESETTING THE SERIAL NUMBER:

To enter the serial number, press the button beside **S/N**, which changes the digit to edit, and then use the **UP** arrow to increment the value of the selected digit from 0-9.

<b>FACTORY SETTINGS</b>	
<b>VERSION:</b>	
< <b>S/N:</b>	
< <b>RESET</b>	<b>NEXT &gt;</b>

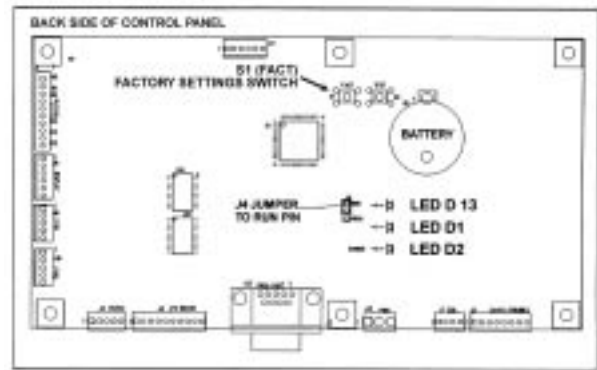
**RESET** - Resets all the parameters to the factory preset values, and erases all recorded cycles in memory.

**NEXT** - Continues to the next factory setting menu.

### V. c - SETTINGS-BACK DOOR:

**BACK DOOR** is not an option, select **NO**.

↓ <b>BACK DOOR (NO)</b>	↑
↓ <b>LABEL PRINTER (NO)</b>	↑
↓ <b>FAN IN HLD (CYCLE)</b>	↑
< <b>RESET</b>	<b>NEXT &gt;</b>



(figure 2)

### V. d - SETTINGS-LABEL PRINTER:

↓ <b>BACK DOOR (NO)</b>	↑
↓ <b>LABEL PRINTER (NO)</b>	↑
↓ <b>FAN IN HLD (CYCLE)</b>	↑
< <b>RESET</b>	<b>NEXT &gt;</b>

**LABEL PRINTER** options are:

**OFF** = No label printer installed.

**ON** = Individual labels.

### V. e - SETTINGS-FANS IN HLD CYCLE:

↓ <b>BACK DOOR (NO)</b>	↑
↓ <b>LABEL PRINTER (NO)</b>	↑
↓ <b>FAN IN HLD (CYCLE)</b>	↑
< <b>RESET</b>	<b>NEXT &gt;</b>

Fans are defaulted to cycle **ON** and **OFF**. Select **(CONT)** for continuous fan operation during hold mode. Select **NEXT** to access additional menu options.

### V. f - SETTINGS-BLASTING DIFF:

↓ <b>BLASTING DIFF (4) °F</b>	↑
↓ <b>HOLDING DIFF (4) °F</b>	↑
↓ <b>ANTI-SHORT (3)</b>	↑
< <b>BACK</b>	<b>NEXT &gt;</b>

**Blasting differential** is the temperature difference between set point temperature and the actual temperature for opening the compressor solenoid when in chill or freeze mode.

## V. SmartChill™ FACTORY SETTINGS (cont'd)

### V. g - SETTINGS-HOLDING DIFF:

↓	BLASTING DIFF (4) °F	↑
↓	HOLDING DIFF (4) °F	↑
↓	ANTI-SHORT (3)	↑
<	BACK	NEXT >

Holding differential is the temperature difference for hold mode.

### V. h - SETTINGS-ANTI-SHORT:

↓	BLASTING DIFF (4) °F	↑
↓	HOLDING DIFF (4) °F	↑
↓	ANTI-SHORT (3)	↑
<	BACK	NEXT >

ANTI-SHORT is the minimum time between closing and opening the compressor solenoid. Select NEXT to access additional menu options.

### V. i - SETTINGS-DEFROST TIME:

↓	DEFROST TIME (20)	↑
↓	DEFR. TEMP (50) °F	↑
↓	DEFR. INTVL (6) HR	↑
<	BACK	NEXT >

DEFROST TIME is the length of defrost time in minutes.

### V. j - SETTINGS-DEFROST TEMP:

↓	DEFROST TIME (20)	↑
↓	DEFR. TEMP (50) °F	↑
↓	DEFR. INTVL (6) HR	↑
<	BACK	NEXT >

DEFROST TEMP is the set point for the coil temperature.

### V. k - SETTINGS-DEFROST INTVL:

↓	DEFROST TIME (20)	↑
↓	DEFR. TEMP (50) °F	↑
↓	DEFR. INTVL (6) HR	↑
<	BACK	NEXT >

Defrost interval is the time interval between automatic defrosts. Select NEXT to access additional menu options.

### V. l - SETTINGS-SECURITY CODE:

ENTER SECURITY CODE FOR NEXT SETTINGS:		
<	(000000)	↑
<	EXIT	ENTER >

The security code is required in order to access the additional options. The code is the last seven digits of the units serial number reversed. Press the button beside the LEFT arrow to select which digit to adjust, and then the button beside the UP arrow to increment the value of the selected digit.

Press button beside ENTER to continue to secured options or press the button beside EXIT to exit the factory settings mode.

NOTE: If the incorrect serial number was entered, the below message will appear on the display.

INCORRECT CODE! PLEASE CALL TRAUlsen FOR ASSISTANCE	
NEXT >	

If the correct code was entered, the below menu will appear on the display, allowing the servicer to proceed on to the secure options.

↓	MACH. MODEL (RBC)	↑
↓	MACHINE SIZE (50)	↑
↓	SOFT CHILL (NO)	↑
<	BACK	NEXT >

## V. SmartChill™ FACTORY SETTINGS (cont'd)

### V. m - SECURE SETTINGS-MACH.MODEL:

↓	<b>MACH. MODEL (RBC)</b>	↑
↓	MACHINE SIZE (50)	↑
↓	SOFT FREEZE (NO)	↑
<	BACK	NEXT >

MACH. MODEL is not an option, select NO.

### V. n - SECURE SETTINGS-MACHINE SIZE:

↓	MACH. MODEL (RBC)	↑
↓	<b>MACHINE SIZE (50)</b>	↑
↓	SOFT FREEZE (NO)	↑
<	BACK	NEXT >

MACHINE SIZE is the distinction, in capacity, between the different model/size blast chillers, either 50, 100 or 200. Do not select any other size than actual chiller size.

### V. o - SECURE SETTINGS-SOFT FREEZE:

↓	MACH. MODEL (RBC)	↑
↓	MACHINE SIZE (50)	↑
↓	<b>SOFT FREEZE (NO)</b>	↑
<	BACK	NEXT >

SOFT FREEZE is not an option, select NO. Select NEXT to access additional menu options.

### V. p - SECURE SETTINGS-FREEZE MAX:

↓	<b>FREEZE MAX (20) °F</b>	↑
↓	SFT FRZ MIN (-5) °F	↑
↓	DEFROST TYPE (ELE)	↑
<	BACK	NEXT >

FREEZE MAX is the maximum selectable value for freezing in FREEZE CHILL mode for all chiller models.

### V. q - SECURE SETTINGS-SFT FRZ MIN:

↓	FREEZE MAX (20) °F	↑
↓	<b>SFT FRZ MIN (-5) °F</b>	↑
↓	DEFROST TYPE (ELE)	↑
<	BACK	NEXT >

SFT FRZ MIN is the minimum selectable value for SOFT CHILL mode for all chiller models.

### V. r - SECURE SETTINGS-DEFROST TYPE:

↓	FREEZE MAX (20) °F	↑
↓	SFT FRZ MIN (-5) °F	↑
↓	<b>DEFROST TYPE (ELE)</b>	↑
<	BACK	NEXT >

DEFROST TYPE is selection for chiller to defrost by (GAS) on RBC50 models and (ELE) for all other models. Press the button beside NEXT to exit factory settings.

### V. s - SECURE SETTINGS-SAVING CHANGES:

<b>FACTORY SETTINGS DO YOU WISH TO SAVE THESE NEW SETTINGS?</b>	
< NO	YES >

Upon selecting NEXT, the above menu should be displayed.

YES - Saves the new settings to memory.

NO - Exits Factory Settings without saving changes.

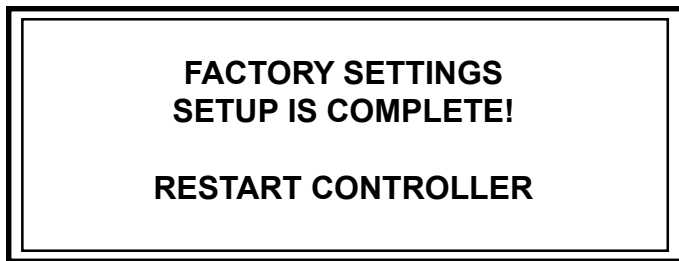
Upon selecting YES (save changes) the below message will appear on the display.

<b>SAVING SETTINGS  PLEASE WAIT...</b>
--

## V. SmartChill™ FACTORY SETTINGS (cont'd)

### V. s - SECURE SETTINGS-SAVING CHANGES (cont'd):

When the new settings have been saved the below message will be displayed.

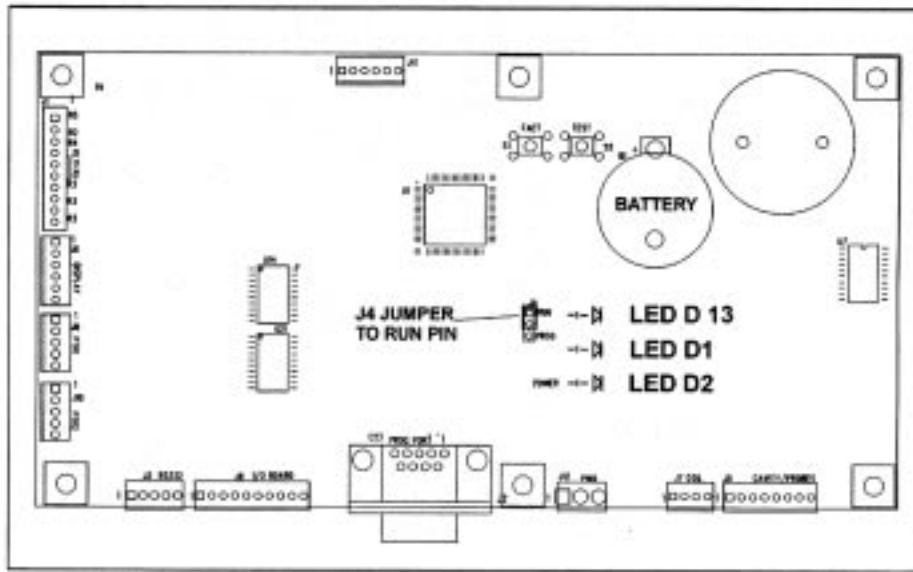


### V. t - SOFTWARE VERSION:

The control program software version is displayed during initialization whenever the unit is turned ON. The display will show the chiller model number and the current software version number as shown below.



## VI. CONTROLLER SERVICE PROCEDURES



### VI. a - CONTROLLER BOARD:

The controller has two LED's to assist in troubleshooting. LED (D2 POWER) is illuminated indicating that power is supplied to the controller board. LED (D1) flashes indicating that the I/O board and control board are communicating. If not, check all harness connections to the communications cables going between the I/O and controller boards. LED (D13) is not used.

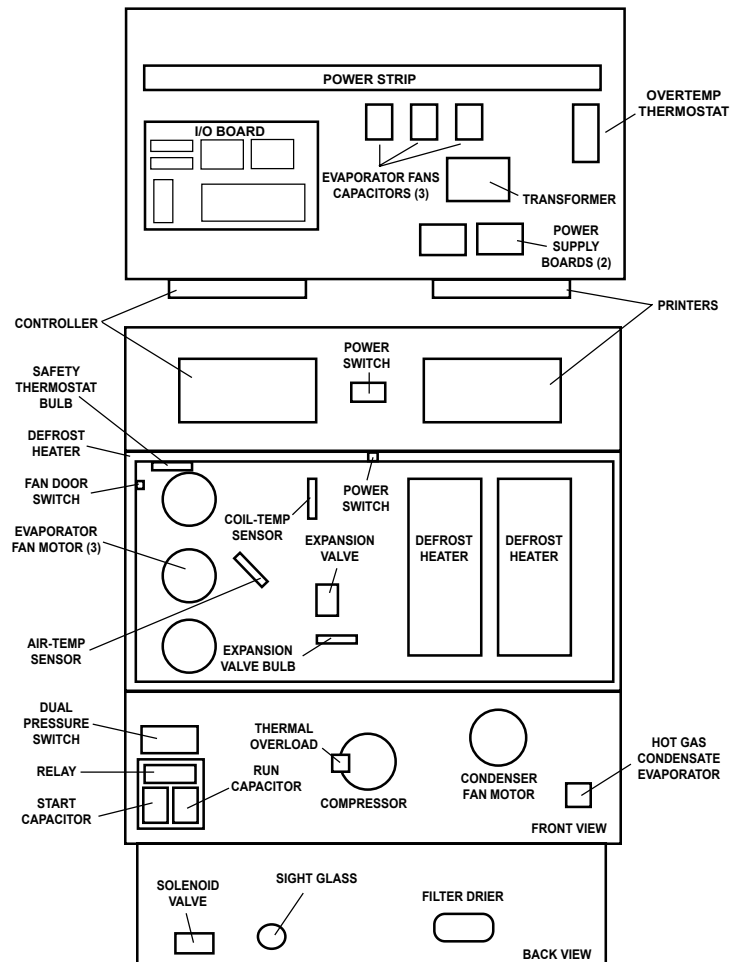
### VI. b - I/O BOARD:

The I/O board has a series of LED's and test points to assist in troubleshooting. When the LED is illuminated, the component should be energized or input open.

LED	COMPONENT
D1	Front Door
D2	Not Used
D3	Fan Door
D4	Compressor Solenoid
D8	Defrost Heater
D9	Low Fan
D10	High Fan
D11	Alarm

TEST POINT	COMPONENT	VOLTAGE
TP1	Relays	+12VDC
TP2	Logic Circuit	+5VDC
TP3	Ground	0V
J17, J18	Triac Compressor Solenoid	0.75 - 2VAC Voltage Drop
J15, J16	Triac Defrost Heater	0.75 - 2VAC Voltage Drop

### VI. c - COMPONENT LOCATION:



## VII. COMPONENT FUNCTION

Compressor	Pumps refrigerant through refrigeration lines and components.
Condenser Fan	Draws air across condenser coil to aid in removing heat from the refrigerant and moves air across compressor to aid in cooling the compressor.
Dual Pressure Control	Low side monitors suction pressure at compressor. Shuts compressor OFF when low pressure setting is reached (cut-out). Allows compressor to run when pressure rises to cut-in setting. High side monitors discharge pressure at compressor. Shuts compressor OFF when high side pressure setting is reached (cut-out). Allows compressor to run when pressure returns to cut-in setting. The differential is the difference in pressure between open and closed states of the pressure switch.
Start Capacitor	Wired in series with the start windings to help start compressor motor.
Run Capacitor	Continually in circuit to help compressor motor during operation.
Thermal Overload	Removes power from compressor if the internal temperature of the compressor becomes too high (auto reset).
Relay	Senses current of run winding of compressor motor. Normally open contacts close when run winding draws a high amperage at start and brings the start capacitor and start windings into the circuit. As the motor reaches operating speed (less amperage through run winding), the normally open contacts open and removes the start capacitor and start windings from the circuit.
Evaporator Fan	Draws air from the cabinet and moves air through the evaporator coil. Air should blow toward the door.
Defrost Heater	Defrosts evaporator coil and prevents water droplets from evaporator coil from freezing before they can drain to the condensate pan. Operates only during defrost cycle.
Air Temperature Sensor	Monitors air temperature inside the cabinet.
Coil Temperature Sensor	Monitors the suction line temperature at evaporator during defrost cycle.
Food Temperature Probe	Monitors temperature of food product.
Front Door Switch	Monitors door for open or closed position. Evaporator fans stop when door is open.
Fan Door Switch	Monitors evaporator fan compartment door for open or closed position. Evaporator fans will not start if the switch is open. Refrigerant system operation stops after 30 seconds switch has been open.
Solenoid Valve	Normally closed. When energized, allows refrigerant to flow from receiver to evaporator coil.
Door Perimeter Heater	Prevents condensate on door frame.
Door Heater Thermostat	Monitors door frame temperature. Opens circuit to door frame heater if the door frame temperature exceeds set point.
Controller	Performs the following functions: a) Displays all data for the current mode of operation. b) Cycles refrigeration system to maintain cabinet temperature. c) Monitors power failures. d) Monitors door position.
Power Supply Boards I/O Board	Controls power to I/O board and printers. Performs the following functions: a) Cycles defrost heaters during defrost cycle. b) Cycles compressor solenoid to maintain cabinet temperature. c) Monitors AC monitor to determine loss of power. d) Closes alarm contact to signal external alarm device, after a malfunction detected. e) Monitors door switch position. f) Monitors fan door switch.
Main Contactor	Controls power to unitelectrical circuits once main switch is closed.
Main Switch	Controls power to main contactor when safety thermostat is closed. Removes power from all components including the controller.
Over Temp. Thermostat (manual reset)	Monitors cabinet air temperature. Opens circuit to main contactor if cabinet temperature exceeds 155°F.
Safety Thermostat (manual reset)	Monitors cabinet air temperature. Opens circuit to main contactor if cabinet temperature exceeds 155°F.

## VIII. SEQUENCE OF OPERATION

### VIII. a - REFRIGERATION SYSTEM:

1. The controller must be in a chill or hold mode.
2. The controller monitors the air temperature and senses a need for cooling.
  - a) The relay that controls the solenoid valve is energized.
    - 1-Solenoid valve is energized and refrigerant flows to the evaporator.
3. The low pressure switch closes with the rise in pressure.
  - a) The compressor motor is energized and refrigerant is pumped through the system.
4. The expansion valve monitors the evaporator superheat and meters the amount of refrigerant entering the evaporator.
5. The controller senses the air temperature requirements have been met.
  - a) De-energizes the relay that controls the solenoid valve.
    - 1-Solenoid valve is de-energized and closes. Refrigerant flow to the evaporator stops.
6. Compressor continues to run. Low pressure control opens as pressure drops.
  - a) Compressor motor de-energized.
7. Unit is cycled by controller.

### VIII. b - IDLE MODE:

1. Conditions
  - a) Unit connected to correct voltage.
  - b) Safety thermostat closed.
  - c) Fan door switch closed.
  - d) Front door switch closed.
2. Main switch closed.
  - a) Main contactor energized, contacts close.
    - 1-Door heater energized.
    - 2-Controller energized.
    - 3-Power to condensing unit controls.
3. Controller goes through power up self-diagnostics and displays main menu.

### VIII. c - HOLD MODE:

Product can be held at chilled temperature by selecting hold mode from main menu. Unit will also go into hold mode automatically when all active probes have reached the target temperature when in "BY TEMP" mode. If a "BY TIME" mode is selected, the unit enters hold mode automatically after the time has expired.

1. Unit is in IDLE mode.
2. Hold mode is selected.

NOTE: When the hold mode is selected, two timers run. One tracks the time in the hold mode and the other tracks the time since the last defrost (hold mode defrosts at a programable interval).

- a) The refrigeration system will cycle on the air temperature of the cabinet.
  - 1-ON at the set-point plus differential.
  - 2-OFF when set-point reached.

NOTE: Set-point and differential are selected in the

### VIII. c - HOLD MODE (cont'd):

factory setup menus.

NOTE: If the cabinet door is opened during operation, the evaporator fans and refrigeration system will shut down.

- b) The hold mode has an automatic defrost cycle after a programable interval of operation in the hold mode.
  - 1-When the defrost cycle is complete and the unit returns to the hold mode, the evaporator fans will not operate until the coil temperature is below 25°F.

3. Hold mode is terminated by pressing the exit key.

NOTE: If the HOLD MODE is terminated by the operator with the defrost cycle in progress, the defrost mode will continue until completion before going into idle mode.

### VIII. d - BY TIME CHILL OR FREEZE MODE:

1. Unit is in IDLE mode.
2. Chill type is selected and a cycle time is entered then start key is pressed.
3. The refrigeration system will cycle on the blasting air temperature set-point.
  - a) ON at the set-point plus differential.
  - b) OFF when set-point is reached.
4. If SOFT CHILL has been selected, the refrigeration system will cycle on the new blasting air temperature set-point. If CHILL was selected, the set-point remains the same until the end of the cycle.

NOTE: If the cabinet door is opened during operation, the evaporator fans and refrigeration system will shut down.

5. Chill mode is terminated when time expires.
  - a) Buzzer sounds until muted.
6. At the end of a chill cycle the unit will enter the hold mode.
  - a) If the end of the chill cycle is acknowledged by pressing the STOP/RESET key, the unit will enter the idle mode.

### VIII. e - BY TEMP CHILL OR FREEZE MODE:

1. Unit is in IDLE mode.
2. Chill type is selected and a target temperature is entered then start key pressed and probe selected.
3. The refrigeration system will cycle on the blasting air temperature set-point.

NOTE: If the cabinet door is opened during BY TEMP chill operation, the evaporator fans and refrigeration system will shut down.

4. Chill mode is terminated when all the product probes reach the target chill temperature.

NOTE: Once the temperature of the probe reaches the target temperature the display will alternate with "DONE", and the buzzer will sound unless muted.

- a) At the end of the chill cycle the unit will enter idle mode.

## VIII. SEQUENCE OF OPERATION (cont'd)

### VIII. f - BY PRODUCT CHILL OR FREEZE MODE:

1. Unit is in IDLE mode.
2. Product type is selected.
3. Chill type is selected and a target temperature is entered then start key pressed and probe selected.
4. The refrigeration system will cycle on the blasting air temperature set-point.

**NOTE:** If the cabinet door is opened during operation, the evaporator fans and refrigeration system will shut down.

5. Chill mode is terminated when all the product probes reach the target chill temperature.

**NOTE:** Once the temperature of the probe reaches the target temperature the display will alternate with "DONE", and the buzzer will sound unless muted.

- a) At the end of the chill cycle the unit will enter idle mode.

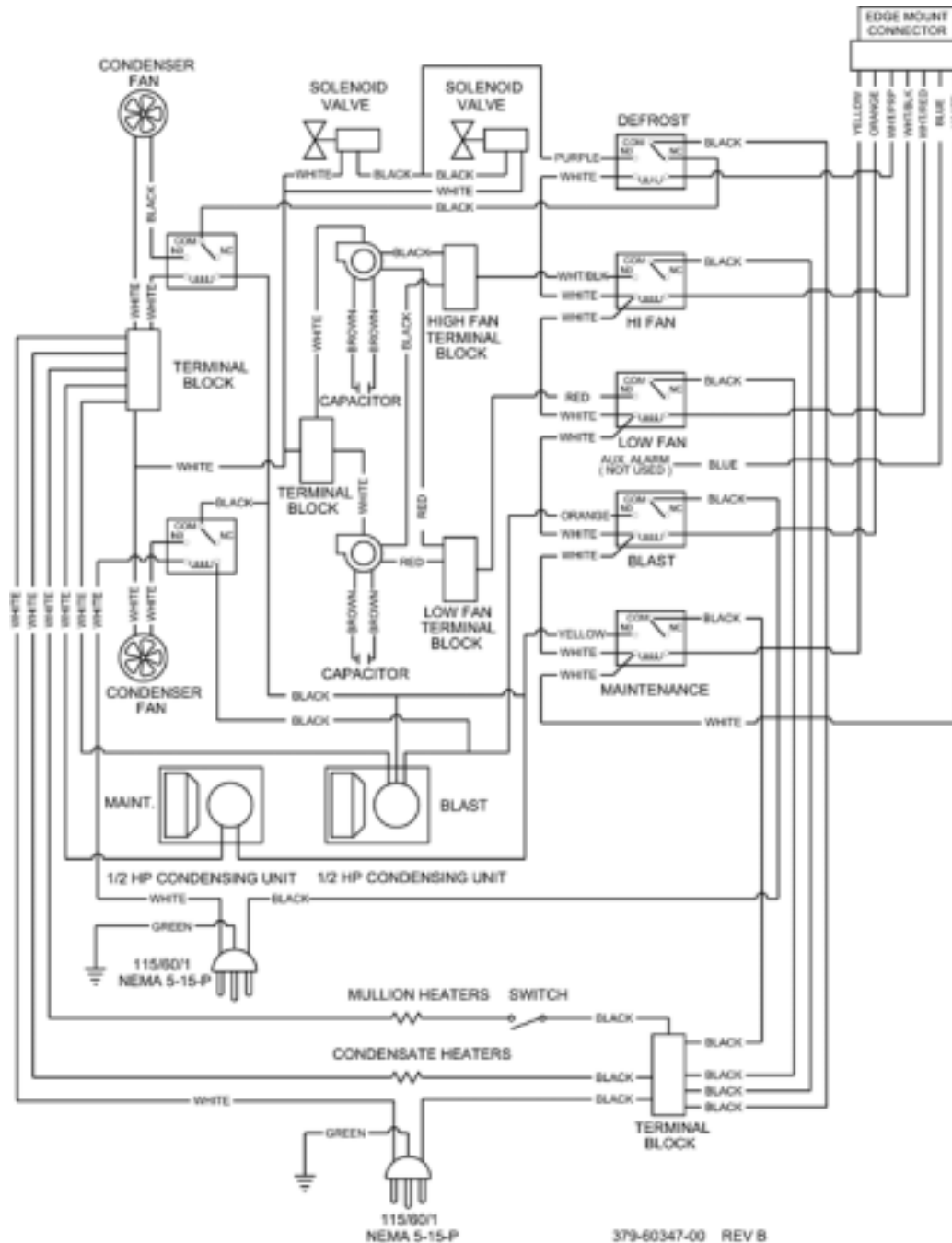
### VIII. g - DEFROST MODE:

1. The defrost mode can be entered manually from the idle mode or automatically from the hold mode.
2. Defrost cycle length is by set minutes or until the coil temperature reaches set-point.

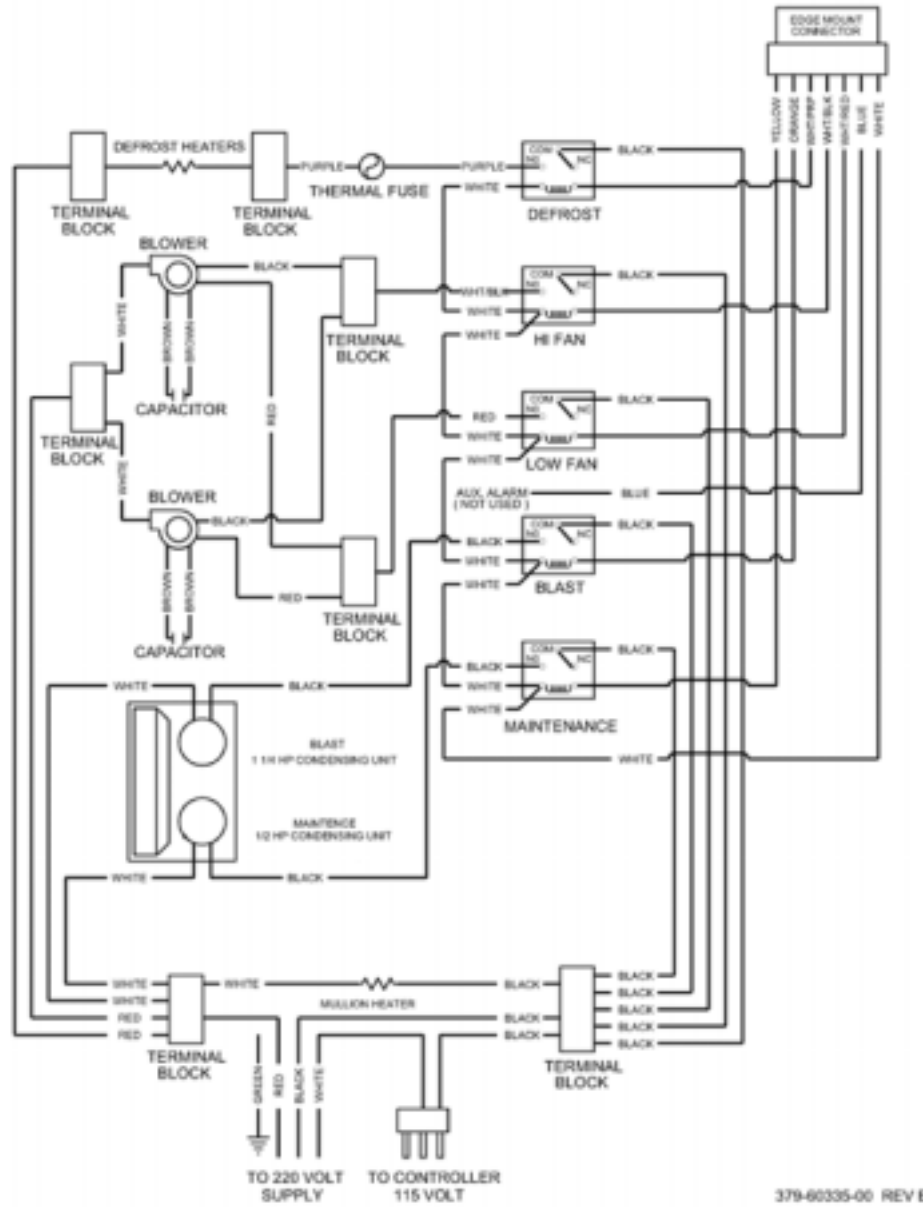
**NOTE:** Minutes and coil temperature are adjustable in the Factory Settings mode.

- a) If the defrost mode was entered from the hold mode, the unit will return to the hold mode.

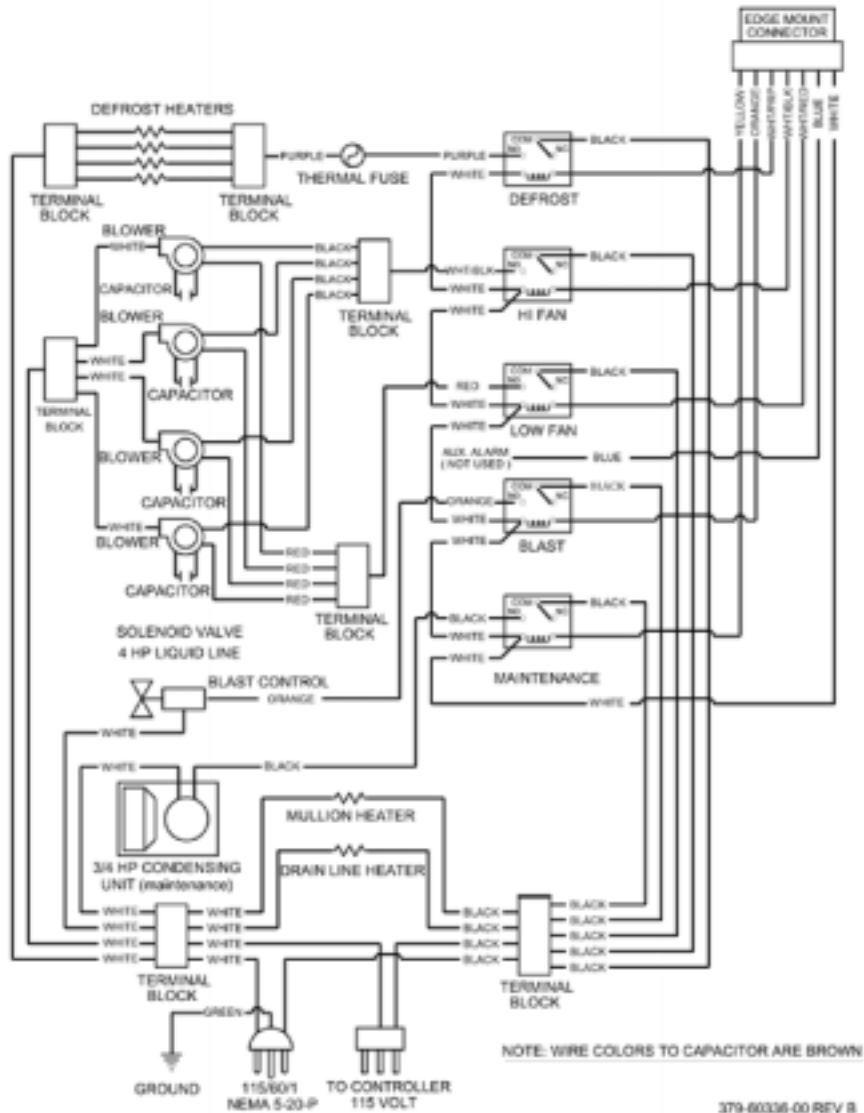
## IX. WIRING DIAGRAM - RBC50 MODELS



# X. WIRING DIAGRAM - RBC100 MODELS



# XI. WIRING DIAGRAM - RBC200 MODELS



## XII. TROUBLESHOOTING

**WARNING:** CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL AND REFRIGERATION SYSTEM TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.



Quality Refrigeration

**Traulsen**

4401 Blue Mound Road Fort Worth, TX 76106  
Phone: (800) 825-8220 Fax-Svce: (817) 740-6757  
Website: [www.traulsen.com](http://www.traulsen.com)

**HOURS OF OPERATION:**

Monday thru Friday 7:30 am - 4:30 pm CST